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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,384	11/19/2003	Simon R. Cuch	01211P.10	9718

7590 08/26/2005

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EXAMINER
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SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 08/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/718,384

Applicant(s)

CUCH, SIMON R.

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### **Double Patenting**

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1 and 7-15 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 3-11, and 28 of copending Application No. 10/276,290. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following explanation.

Copending 10/267,290 discloses aqueous coating formulation consisting essentially of pigment composition comprising from about 10 to about 90% first pigment selected from porous organic pigment, porous inorganic pigment, metal oxide gels, or mixtures thereof and from about 10 to about 90% of second pigment selected from calcium carbonate or mixtures of calcium carbonate and alumina, and binder wherein the ratio of binder to pigment is 1:8 to 1:1.

The difference between the copending claims and the present claims is that the present claims require pigment composition comprising greater than or equal to 50% of first pigment and less than 50% of second pigment while the copending claims require pigment composition comprising 10-90% first pigment and 10-90% second pigment.

However, on the one hand, given that the amounts in the copending claims overlap those presently claimed, it would have been obvious to one of ordinary skill in the art to choose amount of first pigment and amount of second pigment, including those presently claimed, and arrive at the present claims from the copending ones. As set forth in MPEP 2144.05, "In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists", *In re Wertheim*, 541 F.2d 257, 191USPQ 90 (CCPA 1976).

On the other hand, applicant's attention is drawn to MPEP 804 where it is disclosed that "the specification can always be used as a dictionary to learn the meaning of a term in a patent claim." *In re Boylan*, 392 F.2d 1017, 157 USPQ 370 (CCPA 1968). Further, those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in an application defines an obvious variation of an invention claimed in the patent. (underlining added by examiner for emphasis) *In re Vogel*, 422 F.2d 438, 164 USPQ 619,622 (CCPA 1970).

Consistent with the above underlined portion of the MPEP citation, attention is drawn to paragraph 24 of copending 10/276,290 that discloses that if the amount of first pigment is greater than 90%, there is a decrease in optical or image density while if the amount is less than 10%, there is an increase in the degree of wicking or spread of water or ink will occur and to paragraph 31 of copending 10/276,290 that discloses that if the amount of second pigment is greater than 90%, there is an increase in the degree of wicking while if the amount is less than 10%, there is a decrease in optical or image density.

In light of the above, it would have been within the skill level of, as well as obvious to, one of ordinary skill in the art to choose amount of first pigment and amount of second pigment, including those presently claimed, in order to produce an ink that exhibits no wicking and good optical or image density, and thereby arrive at the present claims from the copending ones.

Further, it is noted that the copending claims disclose several ingredients, i.e. cationic resin, whitening agent, etc, and solids content which are not disclosed in the present claims.

However, in light of the open language of the present claims, i.e. "comprising", it is clear that the present claims are open to the inclusion of additional ingredients including cationic resin, whitening agent, etc and to all solids content including from about 15 to about 30%.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

3. Claims 1 and 7-15 are directed to an invention not patentably distinct from claims 1, 3-11, and 28 of commonly assigned 10/276,290. Specifically, although the claims are not identical they are not patentably distinct in light of the explanation given in paragraph 2 above.

4. The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP § 2302).

Commonly assigned 10/276,290, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications filed on or after November 29, 1999.

#### **Claim Objections**

5. Claim 21 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 21, which depends on claim 18, recites that the binder is a water-soluble binder selected from the group of super, fully and partially hydrolyzed polyvinyl alcohols and mixtures

thereof and, optionally, one or more cationic acrylic resins. However, this limitation is already disclosed by claim 18. Thus, claim 21 fails to further limit the scope of the claim on which it depends, namely, claim 18, given that claim 21 recites identical limitation required in claim 18.

**Claim Rejections - 35 USC § 112**

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites an improper Markush group. It is suggested that either (i) in line 4 after “group”, “consisting” is inserted or (ii) in line 5, after “gels”, “and” is changed to “or”.

Similar suggestions made in claim 1, line 7, claim 7, line 2, claim 8, line 2, claim 9, line 2, claim 16, line 2, claims 18, lines 6 and 7, claim 21, line 2, claim 26, line 8, and claim 30, lines 7, 10, and 11 which each recite improper Markush groups.

**Claim Rejections - 35 USC § 102**

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-2, 4-5, 8-9, 11, 16-17, and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Syoda et al. (U.S. 6,562,451) taken in view of the evidence given in Serizawa et al. (U.S. 2003/0083200).

Syoda et al. disclose blade coatable aqueous coating formulation for ink material which comprises 30-50% binder which is polyvinyl alcohol, clay, calcium carbonate, and 15-20% silica gel. The ratio of binder to pigment is 0.43:1 (30/70) to 1.1:1 (50/45). The polyvinyl alcohol utilized is known under the tradename Z-100 which is well known, as evidenced by Serizawa et al. (paragraph 135), as a 99% hydrolyzed polyvinyl alcohol. There is also disclosed ink jet recording material comprising substrate and the above coating located on the substrate (col.1, line 66-col.2, line 2 and col.8, lines 12-39 and 58-61). Given that Syoda et al. disclose aqueous coating formulation identical to that presently claimed, it is clear that the coating would inherently possesses viscosity as presently claimed.

Attention is drawn to example 4 that discloses aqueous coating comprising 49% pigment composition comprising 41% calcium carbonate and 69% clay/ silica gel and 50% binder. Thus, it is calculated that the ratio of binder to pigment is about 1.

In light of the above, it is clear that Syoda et al. anticipate the present claims.

10. Claims 1-5, 8-11, 16-23, 25, and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Kuroyama et al. (U.S. 5,900,115) taken in view of the evidence given in Hosoi et al. (U.S. 5,619,241), Stokes et al. (U.S. 5,660,928), Takeuchi et al. (U.S. 5,714,235), and Schliesman et al. (U.S. 6,129,785).



Kuroyama et al. disclose blade coatable aqueous coating for ink jet recording paper as well as jet recording material comprising substrate and the coating located on the substrate (col.2, line 62-col.3, line 7 and col.3, lines 13 and 15-25). Attention is drawn to example 1 which discloses coating comprising 80 parts synthetic silica, 20 parts precipitated calcium carbonate, and 25 parts polyvinyl alcohol wherein the coating comprises solids content of 30%. It is noted that the polyvinyl alcohol utilized is known under the tradename PVA 117 which is well known, as evidenced by Hosoi et al. (col.11, lines 21-22), as a super hydrolyzed polyvinyl alcohol. Further, the synthetic silica is a silica gel known under the tradename P-78F which is well known, as evidenced by Stokes et al. (col.7, lines 19-23) and Takeuchi et al. (col.5, lines 54-55), to possess average particle size of 13  $\mu\text{m}$ , pore volume of 1.7 cc/g, and surface area of 390  $\text{m}^2/\text{g}$ . Further, it is well known, as evidenced by Schliesman et al. (col.3, lines 45-48), that silica gel inherently possesses pH of 3.5-11. Given that Kuroyama et al. disclose aqueous coating formulation identical to that presently claimed, it is clear that the coating would inherently possess viscosity as presently claimed.

In light of the above, it is clear that Kuroyama et al. anticipate the present claims.

11. **NOTE:** Although neither Syoda et al. or Kuroyama et al. disclose the process of claim 17, it is noted that “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process”, *In re Thorpe*, 777

F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) . Further, “although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product”, *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir.1983).

Therefore, absent evidence of criticality regarding the presently claimed process and given that Syoda et al. and Kuroyama et al. meet the requirements of the claimed composition, Syoda et al. and Kuroyama et al. clearly meet the requirements of present claim 17.

**Claim Rejections - 35 USC § 103**

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. Claims 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Syoda et al. (U.S. 6,562,451) in view of Schliesman et al. (U.S. 6,129,785).

The disclosure with respect to Syoda et al. in paragraph 9 above is incorporated here by reference.

The difference between Syoda et al. and the present claimed invention is the requirement in the claims of (a) pH of the aqueous coating and (b) specific silica gel.

With respect to difference (a), Schliesman et al., which is drawn to coating for ink jet recording sheet, disclose using coating having pH of 4-7.5 in order to improve hold out of the ink resulting in enhanced color saturation and better print quality (col.4, lines 47-54).

In light of the motivation for using coating with specific pH disclosed by Schliesman et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use coating with pH, including that presently claimed, in order to produce coating that possesses enhanced color saturation and better print quality, and thereby arrive at the claimed invention.

With respect to difference (b), Syoda et al. disclose the use of silica gel with surface area of 280-450 m<sup>2</sup>/g and pore volume of 0.9-1.65 cc/g, however, there is no disclosure of the pH or particle size of the silica gel.

Schliesman et al., which is drawn to coating composition for ink jet recording medium, disclose the use of silica gel with surface area of 150-900 m<sup>2</sup>/g, pore volume of 0.4-2.2 cc/g, pH of 3.5-11.5, and average particle size of 2-17 microns in order to produce coating with good absorptivity, suitable viscosity, and good coating rheology (col.3, line 45-col.4, line 1).

In light of the motivation for using specific silica gel disclosed by Schliesman et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such silica gel in Syoda et al. in order to produce coating with good absorptivity, suitable viscosity, and good coating rheology, and thereby arrive at the claimed invention.

14. Claims 6, 10, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroyama et al. (U.S. 5,900,115) in view of Schliesman et al. (U.S. 6,129,785).

The disclosure with respect to Kuroyama et al. in paragraph 10 above is incorporated here by reference.

The difference between Kuroyama et al. and the present claimed invention is the requirement in the claims of pH of the aqueous coating.

Schliesman et al., which is drawn to coating for ink jet recording sheet, disclose using coating having pH of 4-7.5 in order to improve hold out of the ink resulting in enhanced color saturation and better printer quality (col.4, lines 47-54).

In light of the motivation for using coating with specific pH disclosed by Schliesman et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use coating with pH, including that presently claimed, in Kuroyama et al. in order to produce coating that possesses enhanced color saturation and better print quality, and thereby arrive at the claimed invention.

15. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Syoda et al. (U.S. 6,562,451) or Kuroyama et al. (U.S. 5,900,115) either of which in view of Kondo et al. (U.S. 5,320,897).

The disclosures with respect to Syoda et al. and Kuroyama et al. in paragraphs 9 and 10 above are incorporated here by reference.

The difference between Syoda et al. or Kuroyama et al. and the present claimed invention is the requirement in the claim of specific type of specific porous organic pigment.

Kondo et al., which is drawn to coating for ink jet recording paper, disclose the use of organic pigment that is styrene or acrylic resin in order to produce coating with excellent ink receptivity. Kondo et al. also disclose the equivalence and interchangeability of amorphous silica as disclosed by Otani et al. with organic pigment that is styrene or acrylic resin as presently claimed (col.8, lines 39-42, 48, and 56-67).

In light of the motivation for using specific organic pigment disclosed by Kondo et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such pigment in Syoda et al. or Kuroyama et al. in order to produce coating with excellent ink receptivity, and thereby arrive at the claimed invention.

16. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Syoda et al. (U.S. 6,562,451) or Kuroyama et al. (U.S. 5,900,115) either of which in view of JP 03251487.

The disclosures with respect to Syoda et al. and Kuroyama et al. in paragraphs 9 and 10 above are incorporated here by reference.

The difference between Syoda et al. or Kuroyama et al. and the present claimed invention is the requirement in the claim of specific type of calcium carbonate.

Syoda et al. disclose the use of calcium carbonate, however, there is no disclosure of precipitated calcium carbonate while Kuroyama et al. disclose the use of precipitated calcium carbonate, but is silent with respect to its properties.

Pending translation, it is noted that JP 0325148, which is drawn to coating for ink jet recording sheet, discloses the use of precipitated calcium carbonate with surface area of 5-15

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m<sup>2</sup>/g and particle size of 1-5 microns in order to produce coating with high ink absorbing speed and large absorbing capacity.

In light of the motivation for using precipitated calcium carbonate disclosed by JP 03251487 as described above, it therefore would have been obvious to one of ordinary skill in the art to use precipitated calcium carbonate in Syoda et al. or Kuroyama et al. in order to produce coating with high ink absorbing speed and large absorbing capacity, and thereby arrive at the claimed invention.

17. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Syoda et al. (U.S. 6,562,451), or Kuroyama et al. (U.S. 5,900,115) either of which in view of Fujita et al. (U.S. 5,185,213), Tachikawa et al. (U.S. 6,613,418), and JP 03251487.

The disclosures with respect to Syoda et al. and Kuroyama et al. in paragraphs 9 and 10 above are incorporated here by reference.

The difference between Syoda et al. or Kuroyama et al. and the present claimed invention is the requirement in the claim of specific type of specific type of mixture of calcium carbonate and alumina.

Fujita et al., which is drawn to coating for ink jet recording sheet, disclose the use of 30-60% alumina and 20-70% calcium carbonate in order to improve ink gloss, smoothness, ink absorption, and ink dryability (col.3, lines 19-25).

There is no disclosure in Fujita et al. of the average particle diameter of the alumina or specific type of calcium carbonate.

Tachikawa et al., which is drawn to coating for ink jet recording material, disclose the use of alumina possesses average particle diameter of 0.5-10  $\mu\text{m}$  in order to produce smooth surface with lower surface glare (col.3, line 55-col.4, line 1).

JP 0325148, which is drawn to coating for ink jet recording sheet, discloses the use of precipitated calcium carbonate with surface area of 5-15  $\text{m}^2/\text{g}$  and particle size of 1-5 microns in order to produce coating with high ink absorbing speed and large absorbing capacity.

In light of the motivation for using mixture of calcium carbonate and alumina disclosed by Fujita et al. as well as the motivation for using specific types of alumina and calcium carbonate disclosed by Tachikawa et al. and JP 0325148 as described above, it therefore would have been obvious to one of ordinary skill in the art to use mixture of such calcium carbonate and alumina in the coating of Syoda et al. or Kuroyama et al. in order to produce coating with good improve ink gloss, smoothness, ink absorption, and ink dryability, and thereby arrive at the claimed invention.

18. Claims 26-28 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroyama et al. (U.S. 5,900,115) in view of Hosoi et al. (U.S. 5,619,241) and JP 03251487.

Kuroyama et al. disclose blade coatable aqueous coating for ink jet recording paper. There is also disclosed ink jet recording material comprising substrate and the coating located on the substrate (col.2, line 62-col.3, line 7 and col.3, lines 13 and 15-25). Attention is drawn to example 1 which discloses coating comprising 80 parts synthetic silica, 20 parts precipitated calcium carbonate, and 25 parts polyvinyl alcohol wherein the coating comprises solids content of 30%. It is noted that the polyvinyl alcohol utilized is known under the tradename PVA 117

which is well known, as evidenced by Hosoi et al. (col.11, lines 21-22), as a super hydrolyzed polyvinyl alcohol. Given that Kuroyama et al. disclose aqueous coating formulation identical to that presently claimed, it is clear that the coating would intrinsically possess viscosity as presently claimed.

The difference between Kuroyama et al. and the present claimed invention is the requirement in the claim of specific type of precipitated calcium carbonate.

Pending translation, it is noted that JP 0325148, which is drawn to coating for ink jet recording sheet, discloses the use of precipitated calcium carbonate with surface area of 5-15 m<sup>2</sup>/g and particle size of 1-5 microns in order to produce coating with high ink absorbing speed and large absorbing capacity.

In light of the motivation for using specific precipitated calcium carbonate disclosed by JP 03251487 as described above, it therefore would have been obvious to one of ordinary skill in the art to use such precipitated calcium carbonate in Kuroyama et al. in order to produce coating with high ink absorbing speed and large absorbing capacity, and thereby arrive at the claimed invention.

19. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroyama et al. in view of Hosoi et al. and JP 03251487 as applied to claims 26-28 and 31 above, and further in view of Schliesman et al. (U.S. 6,129,785).

The difference between Kuroyama et al. in view of Hosoi et al. and JP 03251487 and the present claimed invention is the requirement in the claims of pH of the aqueous coating.



Schliesman et al., which is drawn to coating for ink jet recording sheet, disclose using coating having pH of 4-7.5 in order to improve hold out of the ink resulting in enhanced color saturation and better printer quality (col.4, lines 47-54).

In light of the motivation for using coating with specific pH disclosed by Schliesman et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use coating with pH, including that presently claimed, in Kuroyama et al. in order to produce coating that possesses enhanced color saturation and better print quality, and thereby arrive at the claimed invention.

20. Claims 1, 8, 11-12, and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otani et al. (U.S. 6,214,449) in view of Hosoi et al. (U.S. 5,619,241).

Otani et al. disclose aqueous coating formulation for ink jet recording material comprising binder and pigment. There is also disclosed ink jet recording material comprising substrate and the above coating located on the substrate (col.3, lines 44-56 and col.4, lines 15-37).

Attention is drawn to example 4 which discloses aqueous formulation comprising 20% solids wherein the formulation comprises 50 parts amorphous silica, i.e. porous pigment, 20 parts polyvinyl alcohol, 50 parts precipitated calcium carbonate, 6 parts cationic resin which is quaternary ammonium polymer, 5 parts acrylic emulsion, 5 parts cationic styrene-acrylic resin, and appropriate amounts of fluorescent dye, i.e. fluorescent whitening agent, and blueing agent. Based on the above, it is seen that the formulation comprises pigment composition comprising

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50% silica and 50% precipitated calcium carbonate and that the ratio of binder to pigment is 0.2:1.

There is no disclosure regarding the hydrolysis of the polyvinyl alcohol. However, it is noted that the polyvinyl alcohol utilized in Otani et al. is known under the tradename PVA 117 which is well known, as evidenced by Hosoi et al. (col.11, lines 21-22), as a fully hydrolyzed polyvinyl alcohol.

The only deficiency of Otani et al. is that Otani et al. disclose the use of 50% calcium carbonate, while the present claims require less than 50% calcium carbonate.

It is apparent, however, that the instantly claimed amount of calcium carbonate and that taught by Otani et al. are so close to each other that the fact pattern is similar to the one in *In re Woodruff*, 919 F.2d 1575, USPQ2d 1934 (Fed. Cir. 1990) or *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed.Cir. 1985) where despite a “slight” difference in the ranges the court held that such a difference did not “render the claims patentable” or, alternatively, that “a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough so that one skilled in the art would have expected them to have the same properties”.

In light of the case law cited above and given that there is only a “slight” difference between the amount of calcium carbonate disclosed by Otani et al. and the amount disclosed in the present claims, it therefore would have been obvious to one of ordinary skill in the art that the amount of calcium carbonate disclosed in the present claims is but an obvious variant of the amounts disclosed in Otani et al., and thereby one of ordinary skill in the art would have arrived at the claimed invention.

21. **NOTE:** Although Otani et al. do not disclose the process of claim 17, it is noted that “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process”, *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Further, “although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product”, *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983).

Therefore, absent evidence of criticality regarding the presently claimed process and given that Otani et al. meet the requirements of the claimed composition, Otani et al. clearly meet the requirements of present claim 17.

22. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Otani et al. in view of Hosoi et al. as applied to claims 1, 8, 11-12, and 16-17 above, and further in view of Schliesman et al. (U.S. 6,129,785).

The difference between Otani et al. in view of Hosoi et al. and the present claimed invention is the requirement in the claims of pH of the aqueous coating.

Schliesman et al., which is drawn to coating for ink jet recording sheet, disclose using coating having pH of 4-7.5 in order to improve hold out of the ink resulting in enhanced color saturation and better printer quality (col.4, lines 47-54).

In light of the motivation for using coating with specific pH disclosed by Schliesman et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use coating with pH, including that presently claimed, in Otani et al. in order to produce coating that possesses enhanced color saturation and better print quality, and thereby arrive at the claimed invention.

23. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Otani et al. in view of Hosoi et al. as applied to claims 1, 8, 11-12, and 16-17 above, and further in view of Kondo et al. (U.S. 5,320,897).

The difference between Otani et al. in view of Hosoi et al. and the present claimed invention is the requirement in the claim of specific porous organic pigment.

Kondo et al., which is drawn to coating for ink jet recording paper, disclose the use of organic pigment that is styrene or acrylic resin in order to produce coating with excellent ink receptivity. Kondo et al. also disclose the equivalence and interchangeability of amorphous silica as disclosed by Otani et al. with organic pigment that is styrene or acrylic resin as presently claimed (col.8, lines 39-42, 48-49, and 56-67).

In light of the motivation for using specific organic pigment disclosed by Kondo et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use

such pigment in Otani et al. in order to produce coating with excellent ink receptivity, and thereby arrive at the claimed invention.

24. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Otani et al. in view of Hosoi et al. as applied to claims 1, 8, 11-12, and 16-17 above, and further in view of Shibatani et al. (U.S. 6,517,929) and Schliesman et al. (U.S. 6,129,785).

The difference between Otani et al. in view of Hosoi et al. and the present claimed invention is the requirement in the claim of specific porous pigment.

Shibatani et al., which is drawn to coating for ink jet recording paper, disclose the use of silica gel in order to produce coating with high ink absorption and color density. Shibatani et al. also disclose the equivalence and interchangeability of amorphous silica as disclosed by Otani et al. with silica gel as presently claimed (col.6, lines 43-46).

There is no disclosure in Shibatani et al. regarding the properties of the silica gel. Schliesman et al., which is drawn to coating composition for ink jet recording medium, disclose the use of silica gel with surface area of 150-900 m<sup>2</sup>/g, pore volume of 0.4-2.2 cc/g, pH of 3.5-11.5, and average particle size of 2-17 microns in order to produce coating with good absorptivity, suitable viscosity, and good coating rheology (col.3, line 45-col.4, line 1).

In light of the motivation for using silica gel disclosed by Shibatani et al. and for using specific type of silica gel disclosed by Schliesman et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such silica gel in Otani et al. in order to produce coating with high ink absorption and color density as well as suitable viscosity and coating rheology, and thereby arrive at the claimed invention.

25. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Otani et al. in view of Hosoi et al. as applied to claims 1, 8, 11-12, and 16-17 above, and further in view of JP 03251487.

The difference between Otani et al. in view of Hosoi et al. and the present claimed invention is the requirement in the claim of specific type of calcium carbonate.

Otani et al. disclose the use of precipitated calcium carbonate, but is silent with respect to its properties.

Pending translation, it is noted that JP 0325148, which is drawn to coating for ink jet recording sheet, discloses the use of precipitated calcium carbonate with surface area of 5-15 m<sup>2</sup>/g and particle size of 1-5 microns in order to produce coating with high ink absorbing speed and large absorbing capacity.

In light of the motivation for using precipitated calcium carbonate disclosed by JP 03251487 as described above, it therefore would have been obvious to one of ordinary skill in the art to use such precipitated calcium carbonate in Otani et al. in order to produce coating with high ink absorbing speed and large absorbing capacity, and thereby arrive at the claimed invention.

26. Claims 13-15 rejected under 35 U.S.C. 103(a) as being unpatentable over Otani et al. in view of Hosoi et al. as applied to claims 1, 8, 11-12, and 16-17 above, and further in view of Fujita et al. (U.S. 5,185,213), Tachikawa et al. (U.S. 6,613,418), and JP 03251487.

The difference between Otani et al. in view of Hosoi et al. and the present claimed invention is the requirement in the claim of specific type of mixture of calcium carbonate and alumina.

Fujita et al., which is drawn to coating for ink jet recording sheet, disclose the use of 30-60% alumina and 20-70% calcium carbonate in order to improve ink gloss, smoothness, ink absorption, and ink dryability (col.3, lines 19-25).

There is no disclosure in Fujita et al. of the average particle diameter of the alumina or specific type of calcium carbonate.

Tachikawa et al., which is drawn to coating for ink jet recording material, disclose the use of alumina possesses average particle diameter of 0.5-10  $\mu\text{m}$  in order to produce smooth surface with lower surface glare (col.3, line 55-col.4, line 1).

JP 0325148, which is drawn to coating for ink jet recording sheet, discloses the use of precipitated calcium carbonate with surface area of 5-15  $\text{m}^2/\text{g}$  and particle size of 1-5 microns in order to produce coating with high ink absorbing speed and large absorbing capacity.

In light of the motivation for using mixture of calcium carbonate and alumina disclosed by Fujita et al. as well as the motivation for using specific types of alumina and calcium carbonate disclosed by Tachikawa et al. and JP 0325148 as described above, it therefore would have been obvious to one of ordinary skill in the art to use mixture of such calcium carbonate and alumina in the coating of Otani et al. in order to produce coating with good improve ink gloss, smoothness, ink absorption, and ink dryability, and thereby arrive at the claimed invention.

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27. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Yamasaki et al. (U.S. 4,770,934) disclose coating comprising binder, silica, and calcium carbonate.

Tomizawa et al. (U.S. 5,985,425) disclose coating comprising polyvinyl alcohol, silica, and calcium carbonate.

Kawano et al. (U.S. 5,478,653) disclose coated pigment comprising precipitate calcium carbonate, silica, binder, and latex.

Chao et al. (U.S. 5,919,558) disclose coating possess pH of 7.5-8.5 and comprising calcium carbonate, pigment, and polyvinyl alcohol.


28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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8/19/05